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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,436	10/02/2003	Lifeng Zhang	A01449	9011

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EXAMINER	
MAIER, LEIGH C	

ART UNIT	PAPER NUMBER
1623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/677,436	ZHANG, LIFENG	
	Examiner	Art Unit	
	Leigh C. Maier	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,6-10,12,13,16-24 and 29* is/are pending in the application.

4a) Of the above claim(s) *4 and 6-9* is/are withdrawn from consideration.

5)☒ Claim(s) *10, 12, 13, 18-24* is/are allowed.

6)☒ Claim(s) *1,16,17 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claims 1, 16, 22 and 24 have been amended. Claims 2, 3, 5, 11, 14, 15 and 25-28 have been canceled. Claim 29 is newly added. Claims 1, 4, 6-10, 12, 13, 16-24 and 29 are pending. Claims 4 and 6-9 are withdrawn as being drawn to a non-elected invention. Any objection or rejection not expressly repeated has been withdrawn. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 16 and 17 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Eisenhart et al (US 5,137,571) in view of Emmons et al (US 4,079,028), as set forth in the previous Office action. Newly added claim 29 is included in this rejection.

Newly added claim 29 requires that the modified polyethoxylated urethane thickener comprise a urethane linkage formed from one of the four particularly recited straight chain and branched chain diisocyanates. Claims 16 and 17 have been amended to depend from claim 29.

Eisenhart teaches as set forth previously. The reference teaches the use of cyclodextrins in combination with hydrophobically modified polyethoxylated urethane thickeners, generally, and further discloses that these thickeners are known and disclosed by Emmons. See col 1, 59-62. The reference does not exemplify all the thickeners based on the full range of diisocyanates recited.

Emmons teaches the preparation of hydrophobically modified polyethoxylated urethane thickeners using a variety of diisocyanates. See paragraph bridging col 8-9. The four recited diisocyanates are also the first four in the list in col 8.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select any of the hydrophobically modified polyethoxylated urethane thickeners taught by Emmons with a reasonable expectation of success because Eisenhart suggests their use.

Applicant's arguments filed May 6, 2009 have been fully considered but they are not persuasive.

Applicant argues that Eisenhart does not disclose the chemical structure of suitable polyurethane thickeners, and the only specific disclosure is that of QR-708, a thickener of "undefined chemical structure." The examiner would note that while the reference does not fully elaborate on the particular chemical structure, its structure is not "undefined." It was established in the Office action of May 16, 2008 (page 3) that this thickener is a known product and is based on 4,4'-methylene-bis(isocyanatocyclohexane). This is also a diisocyanate suggested by Emmons. The examiner maintains that it would be obvious to one of ordinary skill to modify the method of Eisenhart by the use of any of the associative thickeners disclosed in Emmons with a reasonable expectation of success. As discussed previously, the object of Eisenhart is the preparation of an associative thickener with the appropriate viscosity in aqueous solution, eliminating the need for organic solvents, so it would be obvious to use any of the thickeners in Emmons that had previously been thought to need organic cosolvents for the preparation of the desired viscosity.

Applicant further cites alleged unexpected results: "It is surprising and unexpected that the viscosity of aqueous solution of the urethane thickeners derived from the straight chain and branched chain diisocyantes recited in claim 29 is suppressed more by cyclodextrins than the viscosity of aqueous solution of urethane thickeners derived from cyclic or polycyclic diisocyanates is suppressed by cyclodextrins." To support this statement, Applicant cites the data showing that the viscosity of aqueous solutions of urethane thickeners derived from one particular straight chain diisocyanate is suppressed more than the viscosity of aqueous solutions of urethane thickeners derived from one particular cyclic diisocyanate in combination with either of methyl–α–cyclodextrin or methyl–β–cyclodextrin.

This argument based on unexpected results is not persuasive. First of all, given that the viscosity modification depends on the interaction between the hydrophobic moieties of the thickener and the cyclodextrin, some variation is to be expected. It does not appear this difference seen in comparing two species are of statistical and practical significance. It could be that there are similar variations between various cyclic species or various non-cyclic species. Furthermore, the extrapolation of these supposed unexpected results using 1,6-hexamethylene diisocyanate to the other three recited diisocyanates and to all cyclodextrins appears to be rather arbitrary.

Claim 1 is again rejected under 35 U.S.C. 103(a) as being unpatentable over Eisenhart et al (US 5,137,571) in view of Emmons et al (US 4,079,028) and further in view of Lau et al (US 5,376,709) and Lau et al (US 5,521,266), as set forth in the previous Office action.

Eisenhart and Emmons teach as set forth previously.

Eisenhart teaches the general concept of using a variety of cyclodextrins—alpha, beta and gamma, unmodified and modified—in combination with hydrophobically modified associative thickeners to eliminate the use of organic cosolvents and surfactants necessary to prepare aqueous compositions. See col 1, lines 18-51.

Eisenhart does not teach the use of methyl α–cyclodextrin.

Lau '709 teaches the use of methyl β–cyclodextrin as a viscosity modifier in combination with hydrophobically modified urethane thickeners. See abstract and Example 1. The teaching is limited to β–cyclodextrin, but this appears to be based on the availability of particular modified cyclodextrins at the time of the Lau '709 disclosure. See paragraph bridging col 1-2.

Lau '266 discloses the use of variously modified cyclodextrins, including methylated α–cyclodextrin. See col 3, lines 51-67.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select any of the hydrophobically modified polyethoxylated urethane thickeners taught by Emmons with a reasonable expectation of success as discussed above. Furthermore, Eisenhart teaches the use of unmodified α–, β– and γ–cyclodextrins, as well as generically modified α–, β– and γ–cyclodextrins. Therefore, in view of the teaching of Lau '709 regarding the utility of methyl β–cyclodextrin, it would be further obvious to modify the combination of Eisenhart and Emmons by the use of any available modified cyclodextrin, such as methyl α–cyclodextrin, disclosed by Lau '266, with a reasonable expectation of success.

Applicant's arguments filed May 6, 2009 have been fully considered but they are not persuasive.

Applicant argues that Lau '266 teaches an aqueous polymerization method and is silent on polyurethane thickeners, and offers no suggestion that methyl α–cyclodextrin is suitable for viscosity suppression of said thickeners. It is noted that although the reference teaches this polymerization method, it further teaches that the polymers so prepared can be used as associative thickeners and specifically citing Eisenhart: "This patent discloses a method of suppressing the viscosity of associative thickeners using cyclodextrins and cyclodextrin derivatives. After the solution copolymers of the present invention are formed, but before they are decomplexed from the cyclodextrin or cyclodextrin derivative, the solution copolymers may be added directly into a coating composition and decomplexed therein."

Applicant further objects to the combination of references including Emmons because it appears to be Applicant's position that this reference concentrates on cyclic diisocyanates. It is not clear that this is relevant to a claim wherein over half of the diisocyanates are cyclic. Likewise for the purported unexpected results seen in thickeners derived from straight chain/branched chain vs. cyclic diisocyanates.

Applicant goes on to discuss the various physicochemical differences between methyl α–cyclodextrin and methyl β–cyclodextrin, suggesting that these differences would give one of ordinary skill no expectation that they would both be suitable for viscosity suppression. This is not found persuasive because as noted previously, Eisenhart teaches the use of unmodified α–, β– and γ–cyclodextrins, as well as generically modified α–, β– and γ–cyclodextrins for viscosity suppression.

Double Patenting

Claims 16, 17 and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of U.S. Patent No. 7,125,919 in view of Emmons et al (US 4,079,028). Although the conflicting claims are not identical, they are not patentably distinct from each other.

The claims of '919 are drawn to a tinting composition comprising a generic hydrophobically modified ethylene oxide urethane block copolymer and a generic macromolecular organic compound having a hydrophobic cavity. The written description of the latter component comprises various cyclodextrins. See col 6, lines 4-20. The claims do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.

Emmons teaches as set forth above. The disclosed hydrophobically modified ethylene oxide urethane block copolymers have utility for preparing paint, a tinting composition comprising a colorant.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare the recited composition with cyclodextrins because they are disclosed in the written description of "macromolecular organic compound having a hydrophobic cavity." It would be further obvious to select any hydrophobically modified ethylene oxide urethane block copolymer known to have utility for the preparation of tinting compositions, such as paint. In doing so, one of ordinary skill would arrive at the instant invention with a reasonable expectation of success.

Applicant presents no new arguments not already addressed above.

Claims 16, 17 and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,887,928 in view of Emmons et al (US 4,079,028). Although the conflicting claims are not identical, they are not patentably distinct from each other.

The claims of '928 are drawn to a method of improving the viscosity stability of a coating composition comprising a generic hydrophobically modified ethylene oxide urethane block copolymer and an associative thickener, such as a generic macromolecular organic compound having a hydrophobic cavity. The written description of the latter component comprises various cyclodextrins. See col 4, lines 33-58. The claims do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.

Emmons teaches as set forth above. The disclosed hydrophobically modified ethylene oxide urethane block copolymers have utility for preparing paint, a coating composition comprising a colorant.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the reference method with a cyclodextrin because they are disclosed in the written description of "macromolecular organic compound having a hydrophobic cavity." It would be further obvious to select any hydrophobically modified ethylene oxide urethane block copolymer known to have utility for the preparation of a coating composition, such as paint. In doing so, one of ordinary skill would arrive at the instant invention with a reasonable expectation of success.

Applicant presents no new arguments not already addressed above.

Claims 16, 17 and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,376,709 in view of Emmons et al (US 4,079,028). Although the conflicting claims are not identical, they are not patentably distinct from each other.

The claims of '709 are drawn to a method for eliminating the need for organic solvents in a composition comprising a hydrophobic thickener, such as generic hydrophobically modified polyethoxylated urethane by the addition of methyl β–cyclodextrin. The claims do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.

Emmons teaches as set forth above.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the reference method for the elimination of organic solvent using a thickener known to require the addition of an organic solvent as a viscosity modifier with a reasonable expectation of success. In doing so, the artisan would arrive at the instant composition.

Applicant presents no new arguments not already addressed above.

Claims 16, 17 and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 5,137,571 in view of Emmons et al (US 4,079,028). Amended claim 1 is rejected further in view of Lau et al (US 5,376,709) and Lau et al (US 5,521,266). Although the conflicting claims are not identical, they are not patentably distinct from each other.

The claims of '928 are drawn to a method for eliminating the need for organic solvents in a composition comprising a hydrophobic thickener, such as generic hydrophobically modified polyethoxylated urethane by the addition of a cyclodextrin. The claims do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.

Emmons teaches as set forth above.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the reference method for the elimination of organic solvent using a thickener known to require the addition of an organic solvent as a viscosity modifier with a reasonable expectation of success. In doing so, the artisan would arrive at the instant composition.

With respect to claim amended claim 1, Lau '709 and Lau '266 teach as set forth above. The claims recite the use of unmodified α–, β– and γ–cyclodextrins, as well as modified α–, β– and γ–cyclodextrins. Therefore, in view of the teaching of Lau '709 regarding the utility of methyl β–cyclodextrin, it would be further obvious to modify the combination of Eisenhart and Emmons by the use of any available modified cyclodextrin, such as methyl α–cyclodextrin, disclosed by Lau '266, with a reasonable expectation of success.

Applicant presents no new arguments not already addressed above.

Allowable Subject Matter

Claims 10, 12, 13, 18-21 and 22-24 are allowed as set forth previously.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Examiner's hours, phone & fax numbers

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh Maier whose telephone number is (571) 272-0656. The examiner can normally be reached on Tuesday, Thursday, and Friday 7:00 to 3:30 (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Anna Jiang (571) 272-0627, may be contacted. The fax number for Group 1600, Art Unit 1623 is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197.

/Leigh C. Maier/
Primary Examiner
Art Unit 1623